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Graded Tuberculin Tested Milk and its Economic Production.*

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When your hard-working secretary asked me to read a paper on Graded Milk, I thought it my duty to do the best I could, realising that this is a subject not altogether strictly veterinary, and further, that its economic aspects are of great importance. I do not, therefore, put it forward as a scientific veterinary paper. I venture to say that it is not of much service to the general public to produce a small quantity of high quality high-priced milk only. If it is to benefit the people at large, it must be economically produced in large quantities.

As you are all no doubt aware, certified milk has been produced for some years past by a small number of wealthy philanthropists, but is now, I believe, a commercial production since it has become a paying proposition. We all owe a debt of gratitude to these pioneers for the spade work they have done.

If you mention the matter of graded milk to the ordinary farmer, he says: "Yes, it is all very well for wealthy gentlemen, but not for the likes of us." But I contend that until the farmers take up graded milk it cannot be of national importance.

I intend (in this paper) to take graded milk first and, later on, its economics. When I speak of graded milk in this paper it means tuberculin tested, as I understand that there is not at present any demand for milk that is not produced from a tested herd. Before discussing graded milk in detail, I will enumerate the different grades, or special designations as they are officially called, and detail the reasons for their titles.

Originally, there was only one grade recognised by the authorities—namely, grade "A." This now re-appears under the title of "certified milk," I might point out here how mystifying this change is, and also the subsequent titles given to the other grades—namely, grade "A" tuberculin tested, and grade "A." Lastly, there is the Pasteurized milk, which does not interest us at present.

Now, with regard to certified milk, the literature issued by H.M. Government pertaining to graded milk is, to say the least, confusing and involved. After reading the Acts, Rules, Orders and Memoranda one almost longs for the simplicity of a Bradshaw, or, dare I say, Income Tax Form.

I have yet to meet anyone who really understands all the details of this literature. In fact, I have heard it whispered that the Ministry of Health do not quite understand it themselves, so, apparently, additional pamphlets are published to explain their predecessors. Most farmers, being what they are and disliking bureaucracy, income tax forms, and Bradshaw's guides, have been frightened by a combination of this literature and Government Inspectors, and are inclined to fight shy of producing graded milk.

The increasing severity of the rules governing the tuberculin test is even making those now producing question whether they will continue.

To run through the literature, of which it is advisable to procure copies:—

The Milk and Dairies Act, which we all know has been shelved until 1925, was followed by the Amendment Act, 1922, which is mainly in connection with the registration of milk producers, dealers and retailers, and gives the Ministry of Health power to make certain regulations in connection therewith; it also defines the designations of milk sold to the public. There is a circular issued by the Ministry to County Councils and Sanitary Authorities drawing their attention to this Act and other details in connection therewith. Further, by power under this Amendment Act, we have issued the Milk (Special Designations) Order, 1922. It is a document that should specially interest us, but as it has been replaced by a similar Order dated 1923, which revokes the first, but is similar, I shall naturally leave the 1922 Order alone.

Before considering the 1923 Order in detail, let me mention the remaining documents connected with the Act. The Milk Amendment Order, 1922: this does not interest us now, as it only refers to Pasteurised milk. We then have Circular 356, directed to County Councils and Sanitary Authorities, advising them how the Act previously mentioned is to be carried out, and drawing up certain forms in connection therewith (to which I will refer later). As a further contribution, there is the Memo. 77 (Foods under heading "Sale of Milk under special designations"). This is, I believe, a popular résumé of the previous literature, but also gives the prospective producer of graded milk hints as to his procedure. There is also a good article in the June number of the

* Presented to the Mid-West and South Wales Division at Weston-super-Mare on July 12th.

Journal of the Ministry of Agriculture and Fisheries, on the subject of Clean Milk production and the 1922 Act, and *The Report of the Proceedings of the National Milk Conference* contains many interesting papers.

I hope I have not wearied you with this enumeration, but you will see that it is not an easy matter to find out definitely what the future position of a farmer would be who wished to take up graded milk.

I will now go back to the Statutory Rules and Orders 1923 No. 601 of the Act, but I have not time to go through the matter in detail. The Order starts with defining words mentioned in it.

Firstly, the Minister means the Minister of Health. I believe that, owing to this Ministry being without any Veterinary Advisor, mistakes have been made in veterinary matters, but I am informed this gap has been filled. The Order proceeds in detail. I will not, however, trouble you with all the definitions, but pick out those I think are of special veterinary interest.

Examination is one of these. It says, "Examinations of an animal means clinical examinations, carried out in such manner as the Ministry may direct by a Veterinary Surgeon nominated by the Minister, and Veterinary Surgeon's Certificate means a certificate in a form approved by the Minister, signed by the person who has made such examination, and certifying the results thereof."

"*Tuberculin Tests*" is another definition that will interest. Tuberculin tests of an animal means a test made with tuberculin in such manner as the Minister may direct by a Veterinary Surgeon nominated by the Minister, and "Certificate of a Tuberculin Test" means a certificate in a form approved of by the Minister, signed by the person making this test and certifying the result thereof.

I expect you have all seen "Form D" and the list of diseases or Pathological conditions. Personally, I think the list at least curious. It includes anthrax and foot-and-mouth disease. No farmer would get the chance of delivering milk under these conditions. Also retained placenta—a condition that requires better definition; the same with indurated udder. Such definitions as a "Milch Cow" mean a cow kept for milking purposes. I suppose it is necessary to say so, but pass on to give the regulations under which licenses will be granted for certified, grade "A," grade "A" tuberculin tested and Pasteurised.

These milks are graded mainly according to their purity. Speaking generally, certified milk must be filled into glass bottles at the farm, delivered in the same sealed bottles to the consumer. It shall not contain more than 30,000 bacteria to the cubic centimetre and no coliform bacilli in one-tenth of a c.c. Every animal in the herd must be submitted to the tuberculin test. Any reactor or any showing evidence of any disease which is likely to affect the milk, shall be isolated or removed from the herd as may be required.

Grade "A" Milk.—Every cow belonging to the herd to be examined once in every three months and a certificate from a Veterinary Surgeon to be produced. Any animal showing evidence of any disease likely to affect the milk injuriously shall be isolated or removed from the herd, as the case may require.

Grade "A" Milk.—This milk shall not contain more than 200,000 bacteria per c.c. and no coliform bacilli in $\frac{1}{100}$ of a c.c.

Grade "A" Tuberculin Tested Milk. This is subject to the same conditions of testing as certified milk.

The milk of grade "A" and grade "A" tuberculin tested shall be consigned from the dairy when it is produced in an unventilated sealed container to the retailers, who must either sell it in these large containers or bottle it in a similar manner to certified milk.

In order to fill these various conditions, the producer has to consider:—Firstly, how he shall procure a herd of cattle free from tuberculosis and, secondly, how he shall keep his milk free from contamination of bacterial dirt. Pioneers of clean milk have not found this easy, and, as mentioned previously in this paper, they have had to be more or less philanthropists, and have bought their experience dearly.

To consider the tuberculin testing first. When an owner of a herd of cattle contemplates producing certified milk, he has to have his herd tested and get rid of the reactors. As a rule, when he contemplates the result of the first test, the owner is usually, to say the least, distressed. In the case of a pedigree herd it is naturally more serious than a non-pedigree one, and from an economic point of view, often disastrous.

What advice, then, would one give to a farmer who wished to acquire a certified or grade "A" milky herd?

There are, I believe, three ways of economic procedure.

Firstly, in case the matter is not urgent, a clinical examination should be made by this attendant, Veterinary Surgeon paying special attention to the throat, lungs, udder and general condition of each animal, deleting all those showing any clinical symptoms of tuberculosis. If this is done every three months over a period, say, of two to five years, and then the test applied and further deletions, the number turned out will not, in my opinion, be excessive. By getting rid of the bad cases first it will save the younger stock from infection. The Tuberculosis Order of 1914, which was jettisoned early in the war and not brought into action again after peace was declared, was helping a good deal towards this end. It is a pity that this Order is still allowed to lay aside neglected.

Secondly, there is the method which can be adopted by the herd owner who is able to command the use of two or more farms. He tests his heifers only, or if convenient, his cows as well, and keeps those that pass on one farm and those that re-act on the other.

The third method is by having a farm sale, to get rid of the complete herd of cattle and start *de novo*. I should advise the owner who adopted this method to hay down the whole farm for one year, and then start with young tested heifers, or adopt a herd of milk

cattle which are only slightly infected with tuberculosis, such as Channel Island cattle or Welsh black, etc. Buy these, the younger the better, in the open market, and then have them tested, and you will not get many reactors, and what do re-act will sell without much loss.

Whilst on the matter of tuberculosis (the test and economy), I should like to point out the danger of making the procedure of testing cattle, in order to fulfil the requirements of the Ministry of Health (which are being constantly amended), so exacting.

The old tuberculin test, taking three temperatures, was a singularly reliable test when operated every six months, until some unscrupulous people got hold of tuberculin and injected it into animals a few days before, to mask the test that was to be subsequently applied by the Veterinary Surgeon. According to the latest regulations, the Ministry require the temperature of each animal to be taken at least three times the day before the test; then after the tuberculin has been injected, and also at the 6th, 9th, 12th, 15th, 18th and perhaps later hours. This is in addition to the ophthalmic test. This necessitates practically a day and night continuous service of the Veterinary Surgeon for 36 hours on end, and in a large herd is, I venture to say, an impossibility for one man to test satisfactorily.

Nothing is perfect in this world, and why the farmer should be saddled with the trouble and expense of unheard-of regulations when the matter of graded milk is only in its infancy passes my comprehension. Of course, by comparison, it might be desirable to have perfect rubber roads and large low-rented houses for everyone, etc., but what about the expense? The farmer pays for the tuberculin test, but the Minister of Health says, let the test be most exacting, as near perfect as possible, cost what it may.

I now turn to the question of cleanliness of the milk, namely, in the words of the Regulations of the Ministry of Health, "Milk of low bacterial count." We all know that you cannot have dirty milk free from bacteria, and that when we speak of the danger of dirty milk we are thinking of the bacteria mixed up with the dirt.

The pure milk question is largely one of modern habits and civilisation. In past days clean milkmaids in clean white smocks are pictured, milking clean cows, and the milk was consumed practically where is was produced. Now, by the growth of large towns, all this is changed. Most milk is rail borne. Children are looking to the cows for their milk, practically from their first days onwards, and it is for them that the danger mainly lies in impure milk.

When a calf is sucking a cow, it gets its milk direct first hand and practically uncontaminated, as we should all like it. Once, however, you proceed to pass the milk by human agency into receptacles open to the air, contamination begins. To grasp the essentials of bacterial contamination, one should have a nodding acquaintance of bacteriology, which the public have not yet acquired. If milk was always consumed on the farm where it is produced, and fairly soon afterwards, I do not think there would be any inconvenience or danger beyond tuberculous milk. In these days, however, as most milk has to be sent a considerable distance and constantly handled, the smallest quantity of bacterial dirt becomes so multiplied and added to, that the character of the article is largely destroyed. I remember some years ago watching milk arrive at a London terminus in the summer. When the churns were opened, the odour was more like that of sewage than milk, largely owing, no doubt, to the multiplication of the coli-bacteria. I believe that matters have now improved. Of course, the farmer gets all the blamr for the dirt in the milk, but I am sure he is not the only offender. Owners of milk herds, when commencing to try and get a low bacterial count in their milk, may be scrupulously clean—wash their hands before milking and the udders of the cows, and yet have a high bacterial count, or, at any rate, too high for grade "A." They will find that the contamination comes through milking pails and churns; these must be suitably cleaned and sterilised to correct this. The tin coating and the soldered seams of every milk vessel contain millions of minute holes, which, small as they are, can each house millions of bacteria. You cannot satisfactorily clean out these holes by washing or scrubbing, and unsterilised they harbour bacteria, which invade the milk directly the pails or churns are filled, and multiply rapidly. As we all know, milk is an ideal food, and being such, is an ideal medium for certain bacteria to multiply in. Besides, the farmer owns milk pails, he is usually supplied with milk churns from the wholesale factory to fill; these are usually left by the road side, often uncovered, and become a receptacle for road dirt. The less milk is handled the better, if it is to keep its freshness and bloom; and milk has a bloom just as an apple or other fruit freshly picked from a tree. This is one reason why, in the case of certified milk, it is ruled it shall be bottled where it is produced, or on the farm. Grade "A" is bottled twice, and is nearly, but not quite, as good from this point of view.

Ordinary milk is first milked into a can, then strained into a churn—perhaps cooled; goes to a factory or creamery, and is emptied out, measured and cooled—perhaps heated first; goes into a fresh churn. Put on rail, it travels for a long or short time and arrives at its destination. It goes to a wholesale depot, is re-handled, and thence proceeds to a retail shop, where it is re-handled, is emptied into small retail cans, and then consigned to the mercy of the householders.

To go back to the handling on the farm, every speck of dirt or dust with bacteria which drops into the milking pail is going to be multiplied many times before it reaches the consumer in a large town. How, then, should the milker guard against bacterial dirt contamination? It has been found that costly modern cowhouses are not essential to the production of certified or grade "A" milk, and that such milk can be produced in ordinary cowsheds with the aid of clean pails, water and soap, and towels, if the

cows are healthy. Nevertheless, cow homes, well arranged for cleansing and well lighted, make the task very much easier of accomplishment, and give the milker a better realisation of cleanliness up to which to act.

I know of byres where the cows are better groomed than many hunters, and after the standings are cleaned up in the morning you could almost eat your dinner off them. One certified herd in Somerset has reduced its bacterial count to as low as 50 and 10 bacteria per cubic centimetre. When 30,000 per c.c. are allowed without protest from the Ministry, one can realise how effective the routine must be. Nevertheless, it is from an economic aspect for the general farmer that I want to approach the question now. The problem divides itself naturally into two aspects—namely, that presented in the summer time and that in the winter time.

In the winter we know that cows are, as a rule, housed—at any rate at night—and it is during this time that they are apt to lie in their dung, soiling their hind quarters, and sometimes the udder as well. The most successful method I know of dealing with this trouble is to arrange the stalls or standings as follows:—Commence at the cow's head—if she has her head and manger against a wall like a horse, she cannot get further forward. If, however, there is a feeding way behind the manger, the wooden partition between the two should be of such a height that she is unable to put her head or nose over it. The cow should be fastened, preferably by a chain, to a post, with a running iron ring round it, so that she is able to lie down and get up easily, but not to hang far back. The standing should not be more than 5 feet long, excluding the manger, which should be about 2 feet wide and almost on a level with the standing.

At the tail end of the standing the following simple contrivance would go a long way to keep the cow from lying on her dung. Round poles about 6in. in diameter are divided lengthways, so that the two halves are flat one side and round the other, and about 3in. by 6in. These pieces are securely fastened on the standing, at the edge of the gutter, round side upwards. At intervals small openings are made, so that any liquid drainage from the stalls shall be able to run into the gutters.

These fittings have valuable advantages:—

Firstly, when the cow lies down, if she has passed any dung on to the standing, they prevent the cow's quarters from having it pressed into it. Secondly, cows, having got used to this in a few days, stand with their hind legs resting their heels against the edge of the fitment; they also get to know the gutter is directly behind, and this prevents them slipping off the edge of the standing; and, further, the dung drops direct into the gutter. Thirdly, they allow of a good packing of the bedding where it is most needed, and prevent it from being wasted. There should, of course, be a good gutter behind.

With regard to cleaning the cows before milking, the udders and teats nust be washed off clean and dried, and it is a good method to have the hair on and around the udder occasionally removed by clipping. A most important point, which is usually neglected, is to have the tail tied up whilst milking; because the tail being swished about distributes dirt into the milking can and over the milkers. The latter should have washed hands, using carbolic soap, and wear a clean overall. Helmet-topped milking pans with an opening at the side are a great advantage when producing clean milk—they prevent dirt dropping into the pail, and, although slightly more difficult to clean and to milk with, are well worth the extra trouble. They should be immersed in cold water directly finished with and then put in a steam bin and sterilised.

In the summer time it is easier to produce clean milk, as the cows are cleaner out at grass, but, on the other hand, any bacteria that may be present will multiply many times quicker than in the winter. We also have dust to contend with. The producer should be on his guard, and specially pay attention to cooling milk directly, and keeping it cool until it leaves his dairy. It is also important to see that the railway companies provide proper ventilated cool milk vans.

In conclusion, I will ask the question:—

Is there a demand for graded milk among the public? Of course it is something new, but the demand is gradually increasing. Education is a primary factor. When children are taught at school the diseases produced by tuberculous milk—such as meningitis, hip disease, spinal complaint, and summer diarrhœa from dirty milk, and milk-borne diseases, the care of milk in the home, and its high food value, then the demand will increase rapidly.

Farming and milk production might not exist as far as education in the rural elementary schools are concerned. If any notice is taken of agriculture, it is rather to decry than foster it.

The Minister of Health, Mr. Neville Chamberlain, speaking at the Treloar Cripples' College recently, said he hoped to devote some attention to a pure milk supply when he had finished his investigations into the housing schemes.

I think I may state that, for its size, Reading is the leading town in the matter of the quantity of tuberculin tested milk consumed. In the small town in which I live, with less than 1,000 inhabitants, the centre of a large dairy district, and where a quantity of free milk is distributed, there is a demand for certified milk at double the price of ordinary milk. I think this is a striking instance.

This, gentlemen, concludes my paper, and I trust it will be a basis for an interesting discussion.

Mr. Rees thanked Mr. Stevens for his most excellent paper, and asked Mr. Hewer to open the discussion.

Discussion.

The discussion was opened by Mr. J. R. Hewer, of Swindon, who said: I should like to congratulate Mr. Stevens upon his most interesting paper, which is an every-day subject to those of us interested in cattle practice, and I think it is for all of us to encourage a

cleaner milk supply, for, as Mr. Stevens remarks, the general public will only be benefitted when milk is produced cheaply and in wholesale quantities.

He mentions that credit is due to a few waelthy philanthropists who have produced "certified milk" for some time, and that they have done the spade work, and I agree to a point, but I consider there is a lot of spade work still to be done, which the practitioner, in combination with his dairy farming clients, must achieve before the wholesale production of clean milk is on the market. In passing, I would mention that at present there seems to be no distinction drawn between ordinary clean, moderately so, and dirty milk. They all fetch the same price—at any rate to the producer.

Mr. Stevens says the production of "graded" milk is now a paying concern, but I rather doubt if there is any ready sale for the same. It seems to me that the public require grading up as well as the milk, since they buy in the cheapest market, irrespective of quality and contamination, and do not realise that the cleaner the milk the better it keeps, and is, therefore, worth more on account of less wastage, apart from their health and the doctor's bill. Bottling and sealing milk before despatch from the farm is obviously the ideal method, though necessarily much more costly, on account of the cost of bottles and carriage to and fro, etc.

For grading up a herd, Mr. Stevens advises three methods, but I think the quickest (and I question if much more, if any more, costly) is the direct tuberculin testing of the whole herd and the weeding out of the reactors, either by isolation on separate premises and pasture, or by sale at the best advantage, down calving, or as beef. Of course those owners with two or more farms can more easily carry this out. If necessary, to replenish the dairy by imports, heifers only should be purchased, and tested after calving. The few reactors can be passed on without much, if any, loss if purchased right in the first place. Home bred heifers should be tested before being bulled, and reactors weeded out, and those passing should be again tested after calving, before joining the dairy herd. All animals should be tested twice yearly before coming in for the winter, and before going out in the spring, till a clean sheet is obtained.

Mr. Stevens draws a very vivid picture of the processes the milk goes through between leaving the cow and the consumer's house, and there is no doubt it is open to a great risk of contamination in collection, cooling, and transit, and I consider the retailer's methods are very questionable at present.

I think that milk should be always strained on the farm while still hot, preferably before it enters the milking bucket; that receiving buckets should be kept outside the cowshed, away from dust and splashes of all sorts, and from thence be carried to the cooling reservoir, which should be in an ante-room outside the dairy proper, where it should again be filtered before running into the cooling room of the dairy, which should be accessible to the milkers, and here be canned and sealed for delivery.

Mr. Stevens mentions one Somerset dairy that produces ideal—I almost said freak—milk as regards bacterial contamination, but he does not tell us how the feat is acquired. Perhaps he would enlighten us.

With regard to the cowhouse construction, he advised a high wooden partition between the manger and feeding gangway, if there is one. But why wood, and not some impervious structure easily cleansed? Also the split poles, do they not interfere with the cleanliness more than increase it? for it seems to me that they must interfere with flushing the byre, and, being in that position, be constantly wet and dirty, and ultimately stinking, especially if there is a cow that leaks her milk.

Mr. Stevens also implies that more bedding can be used and less wasted. Does he advise litter in the shed during milking? I have always considered that as little as possible, if any, should be used then. He does not mention what flooring he prefers. He advises clipping the udder. Has he tried clipping the hind quarters and upper portion of the tail? I have found cows treated thus in the early autumn, or before entering the winter dairy, kept very much cleaner, and are much more easily cleaned down.

Mr. Stevens advocates the use of a helmet-shaped pail, but I have here, gentlemen, what I think is the latest pattern, which, as you will see, is a stool and pail combined, together with a filter attachment for straining the milk before entering the pail, and consequently very largely reducing bacterial contamination. The filter is, as you will observe, composed of four portions, which speak for themselves.

As you will note, the bucket and also the stool, which seldom gets thought of, can all be readily washed and sterilised. A fresh supply of wad filters can be obtained from time to time.

Mr. SCOTT congratulated Mr. Stevens on the excellence of his paper, and he found himself in agreement so fully with the points raised as to make it non-controversial.

Unfortunately, said Mr. Scott, for the consuming public, milk is a most excellent medium for bacterial growth, and the slightest contamination at its source, or in the process of handling, before it reaches the consumer, develops it in a short time into a richly contaminated article. To produce a perfectly clean germ-free milk was, in his opinion, a physical impossibility, largely by reason of the situation of the mammary gland.

This organ, placed in a position of close proximity to the excretory orifices, with the added disadvantage of a switching, foul-stained tail, means that fouling of the udder is a constant factor, and why nature has failed us so in this anatomical arrangement or derangement passed his comprehension. She might just have well placed the gland on the chest, as in the case of the human being. As regards the handling and transit of milk there was much to be desired. He remembered some years ago going to a well-conducted dairy—at least if one asked the owner he would say it was very well conducted—and there he saw some

half-dozen churns, each with the lid off. Floating in one of these churns was a dead rat, and this milk was destined for London. Had the consuming public become cognisant of this fact, how many would have fought shy of drinking it ?

Again, the look and taste of milk are most deceiving things, for even the most expert might say it is a very nice sample, and yet it may be the harbinger of grave diseases.

He thought the first step to take in producing the purest possible milk was to educate " the man in the street " to the necessity of the great risks he was running, and put the facts absolutely before him in this simple way. Tell him here is a pint of milk guaranteed free from all disease-producing germs, and can be sold at a certain price ; here is another sample which, if his family drank it, might convey to them tuberculosis or other diseases, meaning heavy doctors' bills, and the sacrifice of working capacity and the pleasures of life. This latter sample can be sold to him at half the price of the former. Any man will realise at once that the dearer milk is the most economical, but, in producing the dearer milk, they have placed on the producer's shoulders a greater responsibility, an increased outlay of money, besides a considerable loss of time, and the only way the producer can get his reward for those outlays is by the public giving him the necessary encouragement, and, until that encouragement is forthcoming, they are not going to get grade " A " milk or anything approaching it.

Mr. Scott agreed they were all anxious to get rid of the tuberculous element, but he looked upon excessive milk production and the scheme of milk records as being an antithesis to this idea. One found in the large majority of instances those milk recording people had only one object—to break all previous records. Consequently, the stamina of their prolific cows was depleted, and Mr. Scott thought all clinicians would agree with him that these were the animals which succumbed to T.B. most. This was a point which they, as Veterinary Health Officers, should impress upon their clients. In his practice many were obsessed with the idea of milk production, not in quality, but in quantity, and unless a cow gave 1,000 gallons and over, she was of no use in the dairy.

That meant there was an enormous drain upon the stamina of the animal, and this was the class which succumbed to tuberculosis in the end. The dairy owner could not have it both ways—a normal length of life and a healthy one, and an abnormal milk supply. If they only educated their clients to the danger they were running by producing this excessive volume of milk in a short space of time, they would, he felt sure, be doing a good service to the stock of this country and, incidentally, to their clients.

Mr. BAKER also thanked Mr. Stevens for his paper. In his opinion, the main problem they had to face was trying to rear cattle free from tuberculosis. If they had a supply of cattle free from tuberculosis to go into the dairy, then these problems would not exist, and their propaganda would be to those herds where they reared dairy heifers to rear them free from tuberculosis. If they could guarantee a supply of cattle for dairymen to take up grade " A " milk, then he thought it would be better for them.

Mr. POWELL asked in what percentage of cases tuberculosis could be detected by the Veterinary Surgeon by ordinary clinical examination.

Mr. CODRINGTON commented upon the necessity of greater care in the washing if the herds, and particularly advised that the flanks and tails, and also the milkers' hats, should receive greater attention. He was also of opinion that they should try to educate the public to drink milk as much as possible. In his neighbourhood they had had milk publicity. If milk was to be drunk, it was the best way to get the consumers interested in the subject and push forward milk publicity.

Mr. PERRY thought it was hardly possible to produce grade " A " certified milk in his own district. He had tested several herds during the last few years, and the percentage of reactors had been up to 90 per cent. In one herd fifty-four animals were tested and forty-eight reacted. He wrote to Sir John M'Fadyean and asked what could be done. Sir John wrote back and said, under the circumstances, the only thing that could be done was to do as Mr. Stevens had said—to have a periodical inspection of the cattle and take away those that were clinically affected, and they would in a few years get a herd which could then be tested, and show an average number of reactors. He supported Mr. Scott in his statement that cows forced by feeding to give large quantities of milk were more liable to become affected with tuberculosis than cows giving a normal quantity of milk.

Mr. CODRINGTON had recommended his clients to have their herds tested and then rear healthy animals.

Mr. HOBBS said that he found his clients did not care to test their cattle, because they did not know what to do with the reactors. The consequence was that they had to dispose of the cattle and could not economically do it.

Until tuberculin became compulsory and everyone had to test his cattle he did not think grade " A " milk would be very popular.

THE REPLY.

Mr. STEVENS, in replying, thanked the speakers for their remarks, and also Mr. Hewer for explaining the new pattern can—but it had to be put to the test.

As to testing the herd, Mr. Hewer had said he thought he rather preferred the idea of doing it right away, without clinical examination first. He had had some experience of this, and found it was an awful business, because one sometimes got such a huge reaction that the farmer was frightened at the start. The others all fought shy of the cattle he wanted to sell, and he only got " screw price " for them. On the other hand, the farmer sold the whole herd, and everyone got a fair price, and he was rid of the whole thing—this was another advantage. There was no doubt that a lot of infection was produced through the dung. It was the same with glanders. It was

through ingestion that a great amount of infection occurred.

In one herd he tested he got no reactors for three tests, and then they had a very dry summer, and the cattle ate close to the ground, and they got three or four, but had none since. He was of opinion it was best to advise the farmer to sell the whole of his cattle and start again. That was why he thought it was a good thing to hay down the farm for a whole year; one got rid of the dung, which was a great source of infection.

In connection with that, there was the question of cattle producing large quantities of milk being tuberculous. Of course milk production was a strain on the animal; it was more likely to catch something that was going, and if there was tuberculosis near the herd, it was going to catch that. He did not think that because a cow was a large milk producer she *must* necessarily get tuberculosis. He thought that with Shorthorns it was more marked than with Friesians. Channel Island and Welsh cattle are particularly free from tuberculosis. In one case of Welsh cattle, ten were selected offhand and none reacted. He therefore recommended Welsh cattle.

Regarding freak dairies—the one in which the bacteriological count was 10 and 40—it was an extraordinary thing. Everything was done, the animals were washed and cleaned and properly looked after, and when milked they were taken to a special place where there was no straw, and which had been just washed down with water. They were milked into covered tins, and the milk emptied into a trough and bottled straight away, and the place where the bottling was done was like a laboratory—everything was sterilised. *Re* cleaning-down the poles, he did not think these would interfere with the cleansing, because they would leave space for the water to run away. His experience was that farmers did not usually wash down. With regard to floors, he did not think standings were very important. Of course they should be more or less impervious to wet. The more they clipped a cow, the less likely they were to have dirt sticking to her, but he thought the udder was the most important part.

The carriage on bottles was almost killing the trade.

Milking caps were necessary, because milkers had either to wear these or wash their heads. Preferably, they should wear white ones, which were easily washed.

He thought publicity was an expensive thing. The only publicity they could accomplish was to talk to people about it.

Concerning the percentage of animals discovered as tuberculous by a clinical examination, this would depend upon how far the herd was infected.

Mr. J. J. AVESTON urged the necessity of every member of the Association having grade "A" milk in their own households, and so acting as an example to others.

The percentage of human to bovine infection was also discussed.

(Continued at foot of next column.)

The King and the "Dick" Centenary.

The following letters, copies of which have been forwarded to us by Dr. Bradley, will be of interest to all our readers and an encouragement to the profession.

Buckingham Palace,
2nd August, 1923.

Dear Dr. Bradley,

Thank you for your letter of the 30th ultimo, with which you were good enough to forward for submission to the King a copy of your History of the Royal (Dick) Veterinary College, Edinburgh.

This has been laid before His Majesty, and, in conveying to you the King's thanks, I am commanded to add how interested His Majesty was to learn that the College is celebrating the Centenary of its foundation.

Yours very truly,
(*Signed*) STAMFORDHAM.

O. Charnock Bradley, Esq., M.D., D.Sc., M.R.C.V.S.,
Principal, Royal (Dick) Veterinary College,
Edinburgh.

St. James's Palace, S.W.,
August 1st, 1923.

Sir,

I am desired by the Prince of Wales to convey to you and to the members of the Centenary Committee an expression of His Royal Highness's sincere thanks for the History of the Edinburgh Veterinary College, which His Royal Highness has been pleased to accept.

Yours faithfully,
(*Signed*) A. LASCELLES,
Asst. Private Secretary.

O. C. Bradley, Esq., M.D., D.Sc., M.R.C.V.S.

A Milk-borne Epidemic of Gastro-Enteritis.

A recent epidemic of milk-borne gastro-enteritis in Denmark has been the subject of instructive investigations by Dr. A. Christensen and Veterinary Surgeon P. Grinsted,* who claim that for the first time (with the possible exception of Dr. K. F. Meyer's case reported in the *Journal of Infectious Diseases* for 1916) proof positive has been found of a typical bovine paracoli infection being conveyed by cow's milk to man. The epidemic in question broke

* Hospitalstidende, April 11th and 18th, 1923.

(Continued from previous column).

Considerable diversion of opinion was expressed with regard to the Welsh cattle, the general consensus of opinion being that they were wild, and first class in neither milk nor flesh production; but Mr. Stevens pointed out that his remarks were made specially with regard to their comparative freedom from tuberculosis. He thought that by crossing the Welsh with the Friesian type, a good general utility animal would be produced.

out on October 11th, 1922, in a large hospital. Thirty-nine of the staff and 56 of the patients were seized with general malaise, fever, abdominal pain, nausea, headache, vomiting, and diarrhœa. In two cases there was an outbreak of herpes on the upper lip, and in one case there was partial loss of consciousness for 24 hours. None of the patients died, and no new cases occurred after the first outbreak. The incubation period was evidently very short, as was also the period during which the disease was contracted; for among the patients there was one who had been admitted to hospital for some other disease only the day before the outbreak occurred, and none of the persons admitted to hospital on the morning of the outbreak developed gastro-enteritis. All the patients had taken unboiled milk, and an inspection of the sources of the milk-supply led to the discovery that at a small farm one of the 13 cows inmilk had fallen ill on October 9th. Next day it had been very ill, with offensive diarrhœa and a temperature of 40° C. The cow died in the night of the 11th and 12th, but the milk yielded on the 9th had not been thrown away, although the cow's udder was œdematous. The necropsy on the cow showed definite signs of septicæmia, the spleen being gigantic and the liver and mucous lining of the small intestine showing acute inflammatory changes. Sections of the udder showed early mastitis which was evidently secondary to the enteritis and septicæmia. Numerous Gramnegative short bacilli, identified as bovine paracoli bacilli, were found in the spleen and secretion from the udder. A pure culture of the same bacilli was obtained from the fæces of two of the patients, and agglutination tests of the sera of 31 patients on the ninth to the twelfth day of the disease left little doubt as to the relation of the germs found in the cow to the epidemic in man. There is a disease in cattle known in Denmark as "paracoli bacillosis," from which calves often suffer, but to which full-grown cattle are usually immune. It may be that this comparative immunity of full-grown cattle to paracoli bacilli explains the rarity with which human beings seem to contract this form of gastro-enteritis. But it is conceivable that this rarity is more apparent than real, and that were agglutination tests to be carried out more frequently in epidemics of this kind, bovine paracoli bacilli would often be convicted. The moral of this episode is not far to seek. Were farmers to be systematically taught the risks of keeping the milk of sick cattle, they would not be tempted to follow the penny-wise-pound-foolish policy of mixing infected with pure milk.—*The Lancet.*

National Veterinary Medical Association.

PRESENTATION TO MR. J. B. BUXTON.

	£	s.	d.
Contributions previously acknowledged	82	5	6
Contributions received subsequently:—			
Messrs. W. Perryman, H. C. D. Golledge, J. Dunstan, W. W. Lang, W. D. Halfhead and Capt. J. T. Edwards	1	16	6
Total ...	£84	2	0

The Veterinary Record.

18th August, 1923.

National Veterinary Medical Association of Great Britain and Ireland, Limited.

Cheques should be made payable to the Acting General Secretary at the Offices of the Association, 12 Buckingham Palace Road, S.W.1.

N.B.—Members receiving this paper in a brightly-coloured wrapper will please understand that their subscription is already overdue, and should be forwarded at once to the above address.

THE CAMBRIDGE APPOINTMENT.

The announcement was made on Friday, August 10th, of the long-awaited appointment of the Professor of Animal Pathology at Cambridge University. Speculation has been keen as to the probability or otherwise of the post being given to a veterinary surgeon, for it is strongly felt in our profession that a veterinary surgeon, by his training and experience, is the man best qualified to carry out the requisite work satisfactorily. Moreover, it is very desirable that appointments of this nature should be open to our profession, providing some inducement of value to encourage men to undertake research. In a previous leading article we referred to the paucity of suitable men from whom a selection could be made, and we voiced the opinion of many when we said that the selection board might have to look outside our profession to find a man with the necessary qualifications as a pathologist who might be fitted to undertake the duties. Had the board followed this course, it would have resulted in profound disappointment to us all. The announcement of the appointment of Mr. J. Basil Buxton is, therefore, extremely welcome and satisfactory, and in offering him our sincerest congratulations on this further tribute to his professional attainments, we may at the same time congratulate the profession both on gaining for itself this prize and on being represented at Cambridge by so distinguished a member. The future success of the Cambridge Institute now rests largely in Mr. Buxton's hands, and we wish him every prosperity. His position is one of great responsibility, and his influence and that of the institution of which he is the head will be felt throughout the world. We hope he may be able to make great contributions to science and open the gate for the veterinary practitioner to enter upon new paths of useful and remunerative work.

Abstracts.

Infective Diseases in Southern Rhodesia.

The report of the Chief Veterinary Surgeon of Southern Rhodesia for the year 1922 (with report of the Director of Veterinary Research) states :—

"At the beginning of the year under review the position in regard to infective diseases of stock was most satisfactory, and with the exception of a serious and unexpected outbreak of Coast Fever in the Charter district and two outbreaks of the same disease in the Melsetter district, this was well maintained throughout. Fortunately, the spread of infection in both districts has been limited so far to reasonable proportions, but the restrictions necessary to accomplish this result have caused considerable hardships to the cattle owners concerned through their being unable to market cattle and the stoppage of transport by oxen. This is unavoidable, as our past experience shows that the suspension of all cattle movements in a large area, to begin with, is one of the most effective methods of preventing the spread of infection. Of the other diseases which exist in the Territory, contagious abortion of cattle was most in evidence, and no doubt will continue to be a cause of loss until some satisfactory method of prevention by vaccination is discovered."

Following the detailed report of Mr. J. M. Sinclair, Lieut.-Col. E. W. Bevan, Director of Veterinary Research, states :—

"During the early part of the year the work was limited to the routine duties of the office and laboratory, research work being held over pending the removal from the old establishment to the new veterinary research station, which it was hoped would be available in February. Unfortunately the laboratory was not ready for occupation until June, and the stables are not even yet completed. When the removal had been effected, the organisation of the new station involved considerable additional work, and in the absence of professional assistance little time was available for research. Investigations which had been commenced had to be abandoned and much necessary work could not be undertaken. This is greatly to be regretted. As pointed out by the Director of Veterinary Education and Research for the Union, 'Restriction of research work is not actually in the economical interests of the country.' For example, had it been possible to continue the inoculation of horses, which for several years has proved so successful, many thousands of pounds and much disappointment and inconvenience might have been saved to horse owners during the present horse-sickness season."

Mr. G. Catlin, of the Post Office, Turnford, Broxbourne, left one guinea to Messrs. Golding and Andrews, veterinary surgeons, of Ware, Herts, "to put an end to my dog Bessie in the most merciful manner possible. I should like her to be buried with me in my coffin"; and £10 to "the Home for Lost Dogs in London."

Association Report.

The Central Veterinary Society.

A general meeting of the Society was held at 10 Red Lion Square, W.C., on Thursday, July 12th, at 6 p.m., Captain A. E. Willett, President, occupying the chair. The following signed the attendance book: Messrs. W. R. Davis, Henry Gray, R. T. Cornell, H. D. Jones, S. H. Slocock, J. Willett, W. Perryman, James Rowe, Herbert King, Major P. W. Dayer Smith, Captain H. Kirk, Prof. B. Gorton, and J. F. Macdonald, Hon. Secretary. *Visitors:* Messrs. T. J. Richardson and E. G. Langford.

Minutes.—On the motion of Mr. J. WILLETT, seconded by Major P. W. D. SMITH, the minutes of the May meeting were taken as read, and were confirmed and signed.

CORRESPONDENCE.

The HON. SECRETARY announced that letters apologising for absence had been received from Capt. A. H. Andrew, Mr. J. W. McIntosh, Professor Macqueen, Captain G. Dunlop Martin, Mr. H. L. Roberts, Major Simpson, Mr. E. L. Stroud, Colonel Williams and Professor Wooldridge.

The Secretary read the following communication from Edward G. Fairholme, Chief Secretary, R.S.P.C.A., and Ernest Bell, Chairman of the Performing Animals Defence League, setting out the objects of the Performing Animals Regulations Bill and appealing for the Society's support :—

PERFORMING ANIMALS DEFENCE LEAGUE.

Sir,—Professor Frederick Hobday, F.R.C.V.S., has suggested that we should write to you about the Performing Animals (Regulation) Bill, which has passed the Second Reading and is shortly to be considered by a Standing Committee at the House of Commons.

We are anxious to get the support of the Veterinary Profession in its favour. You will see on reading the enclosed that the Recommendations of the Select Committee upon which the Bill is based are moderate and not prohibitive, interfering only with those trainers who use cruelty, leaving those who train by harmless means untouched.

This reform has a large public backing and the support of many political and social societies; for example, at the Teachers' Conference at Brighton, April, 1922, eighteen hundred delegates, representing 121,356 teachers from all over the country, passed a resolution in favour of the Bill without one dissentient. The Royal Society for the Prevention of Cruelty to Animals and the Performing Animals Defence League feel that the Veterinary Profession also might well be inclined to support this moderate and humane measure.

That cruelty is in many cases connected with exhibitions of stage animals is established. The Select Committee that investigated this matter took evidence from circus proprietors, actors, managers, stage hands, electricians, conjurors, showmen, and expert independent persons,

and decided that in order to stop unnecessary cruelty the accompanying eight recommendations should be made law.

It may be remembered that owing to bad conditions meted out to stage and acrobatic children they have been protected by the Employment of Children Act as well as the Prevention of Cruelty to Children Act. If the child acto. needs special protection, how much more must the animal actor need some supervision.

A copy of the Bill and any further information wil be sent on request.

Yours faithfully,

EDWARD G. FAIRHOLME,
Chief Secretary, R.S.P.C.A.

ERNEST BELL,
Chairman, Performing Animals Defence League.

RECOMMENDATIONS OF THE SELECT COMMITTEE UPON WHICH THE BILL NOW BEFORE THE HOUSE OF COMMONS IS BASED.

1.—That a Committee of Supervision should be appointed, consisting of a chairman and four other members by the Secretary of State for the Home Department, two members by Animal Protection Societies, and two by the Trade . . . and that this Committee should have the power of prohibiting, restricting, suspending and modifying any performance or the training of animals for any specified performance or exhibition which they consider undesirable on the ground of cruelty.

2.—That all persons who train animals for public exhibition or performance and the places where they train them should be registered.

3.—That a representative of the local or borough county council, the officers of the R.S.P.C.A., and the police should have access at all times, without previous notice being given, to the places where animals are trained or exhibited.

4.—That in view of the fact that the Committee would have no control over training abroad, the Committee should have power to prohibit the performances of animals trained abroad in those cases where in their opinion the conditions of their training involved cruelty.

5.—That the training and performances of all chimpanzees and anthropoid apes be prohibited.

6.—That the training, exhibition and performances of all the larger carnivora (such as lions, tigers, leopards and hyenas) should have the special attention of the Committee.

7.—That the use of mechanical and other appliances in the execution of conjuring tricks which involve cruelty be prohibited.

8.—That the penalties for cruelty to animals be revised and increased.

N.B.—For purposes of drafting the Committee of Supervision has been changed to an Advisory Committee. This is based on the Plumage Act, which is working well.

Mr. HENRY GRAY called attention to the fact that nothing was said as to veterinary surgeons being on the Committee it was proposed to set up. Personally, he thought the profession the members of which were the custodians of the health and happiness of animals should be represented on the Committee, the representatives being nominated by the Royal College of Veterinary Surgeons. There should be two veterinary surgeons to represent the profession, but not themselves.

Captain W. H. KIRK supported what Mr. Gray had said.

Mr. SLOCOCK also strongly supported Mr. Gray's remarks. It seemed the profession was ignored in the matter. He thought, moreover, that the Performing Animals Defence League would best achieve its object by showing kindness and consideration to the trainers of the animals; more could be done by persuasive measures than in any other way. He feared the league might—as it easily could—develop into another persecution society, and its association with the R.S.P.C.A. strengthened that impression. There would be no better society in existence than the R.S.P.C.A. if it kept to its ideals, but everyone must be familiar with cases in which small owners were not prosecuted, but persecuted; proper consideration was never shown to owners by the Society and its officials. If the league would give fair play to the owners of performing animals, and try and achieve its objects by persuasive methods, and if the Veterinary Profession was represented on the Committee it was proposed to set up, he would strongly support the proposal.

The Hon. SECRETARY said the eight points put forward seemed fairly moderate.

Mr. SLOCOCK said that power was given to the R.S.P.C.A. officials to go everywhere.

The Hon. SECRETARY said that they, or the representatives of the local Borough Council or the Police were to have access to training quarters; otherwise there would be no check on the trainers.

Mr. SLOCOCK was of opinion that the majority of the R.S.P.C.A. officials he had met—he did not say all of them—were not the kind of men he would like to be allowed to go alone to inspect training quarters, etc.

Mr. GRAY agreed.

The PRESIDENT asked whether any other members wished to express their views on the matter, which seemed to him to be one of great importance. So far as could be gathered from what the Secretary had read, the profession was to be ignored entirely, whereas personally he thought it should be represented, and well represented.

The Hon. SECRETARY said there was one paragraph he did not quite understand, namely No. 5, which said that the training and performance of all chimpanzees and anthropoid apes should be prohibited.

Mr. HENRY GRAY said that was on the ground that such animals could not be trained except by cruelty. He had been told—and that was the evidence before the Committee—that the only animal which could not be trained by kindness was the monkey.

Mr. DAVIS entirely agreed.

Mr. J. WILLETT proposed that a reply be sent to the effect that the matter was discussed at a meeting of the Society, and the concensus of opinion was that the Society could not give support to the movement on which it was not represented.

Captain H. KIRK thought it should be 'Profession' and not 'Society.'

Mr. GRAY thought the Royal College of Veterinary Surgeons should have power to nominate two veter-

inary surgeons to represent the profession, for the protection of the owners of the animals.

Mr. J. WILLETT said the Central Veterinary Society was a body of veterinary surgeons, and as a Society could not support the movement unless it was represented on it. The letter which had been read was addressed to the Society, and not to the profession.

Prof. GORTON seconded Mr. Willett's proposal.

Captain H. KIRK said that,as a Society, they supported the idea of veterinary surgeons being on the proposed Committee.

Mr. GRAY pointed out that if the Committee selected two veterinary surgeons, the men chosen would not represent the profession.

Mr. JONES thought the Royal College of Veterinary Surgeons would not do it.

Mr. J. WILLETT agreed; he thought the College would say at once that it was only the governing body of the profession, and had no power to do it.

Captain H. KIRK suggested it might be done by the National Veterinary Medical Association.

Mr. GRAY said that the Royal College of Veterinary Surgeons had nominated men to represent the profession on many previous occasions. It could do that out of courtesy and should have the privilege of nominating representatives.

The PRESIDENT reminded the meeting that the question to be decided was how to reply to the communication which had been received. Should the reply be to the effect that the Society could not give its support unless members of the profession, approved by it, were given a place on the Committee ?

Mr. JONES proposed that the communication be merely acknowledged.

Mr. DAVIS seconded this proposal.

Captain KIRK pointed out that if nothing more than that was done, the Committee would be formed without any veterinary surgeons on it. He supported Mr. Willett's motion.

Mr. WILLETT re-submitted his motion in the following terms:

> "That a reply be sent that this matter was brought before the Society and fully discussed, and the concensus of opinion was that the Society could not support any movement unless it was represented on it."

In reply to the PRESIDENT, Mr. JONES said he desired his proposal to be put as an amendment to Mr. Willett's motion.

The amendment was then put and *lost*, following which Mr. Willett's motion was put and *carried*.

Election of Fellow.—A ballot was held for the election of Captain F. C. Gillard, M.C. (proposed by Major F. G. HOBDAY, C.M.G., and seconded by Mr. F. H. STAINTON, F.R.C.V.S.) at the close of which the President announced, amid applause, that Captain Gillard had been unanimously elected.

Nomination.—The PRESIDENT submitted the name of Mr. Jason W. Pritchard, M.R.C.V.S., proposed by himself and seconded by Mr. J. WILLETT.

MORBID SPECIMENS.

Professor B. GORTON exhibited the skull of a fox which had been dug up in a part of the country where the killing of a fox, except by dogs, was looked upon as a serious crime. The stomach had been analysed for poison, but none found, and the head had come into his possession. The animal had evidently been killed with a shot gun.

He also showed the skull of a fox terrier, a few months old. The animal had been the property of a lady who also kept a bull dog, and who went out one evening, leaving them playing in the garden. On her return a short time later she found the terrier lying on the ground, nearly dead—still breathing, but unconscious. She hurried with it to the Great Northern Hospital, where they diagnosed fracture of the skull and told her they could do nothing for it, but that if it was still living the next morning she should take it to the Veterinary College. It died at midnight, but she brought it to the College next morning, and a *post-mortem* revealed that it had a fractured skull. No doubt the bull dog, in playing with it, had bitten its head and caused the fracture. The interesting feature of the case was that there were no signs of external injury, beyond a slight scratch in the maxillary region.

Mr. JONES showed two specimens. The first was of a case of tarsal arthritis, with very extensive disease of the articular surfaces. The horse in question had been lame for about a month previous to slaughter, and the specimen was obtained as the result of a *post-mortem*.

The second was of a case of necrosis of the pedal bone. The animal had septic coronitis, the condition being found after his destruction.

The PRESIDENT related two cases which had been brought to his notice. The first was that of a half-bred Jersey shorthorn cow, which, on his arrival, he found to be suffering from actinomycosis, her tongue was hanging out of her mouth for about four inches, she was salivating freely, mastication was almost stopped and she was rolling her eyes as if in a great deal of distress. He did not give a very good prognosis, but he prescribed for her, and he wished to demonstrate how a mistake in that connection might lead to an accidental recovery. He prescribed a dose of twelve grains of biniodide of mercury, six to be given in the morning and six in the evening, and he gave the man an eight-ounce bottle of the stuff. On the third day he called and found the cow had her tongue in her mouth, had commenced to eat and was obviously better, but the cowman asked for some more medicine for her. Having given him sufficient for 16 of the doses he had prescribed, he was rather surprised at such a request, and it turned out that the cowman had given her 24 grains a day of biniodide of mercury, and in spite of that by the third day she had so far recovered as to be able to eat. The cowman had misunderstood his directions, but, thinking that the experiment was worth pursuing, in view of the result obtained, he prescribed a further 24 grains a day, and in eight days the cow was practically cured.

That seemed to show that biniodide of mercury could be given to cattle in much greater doses than was generally believed. The cow in question made an uninterrupted recovery, and was giving good milk.

The second case he wished to mention was that of an eleven-hand four-year-old brown mare pony, which was reported with colic. She was found in considerable pain, with patchy perspiration; she would roll violently and lie right on her back, like a Pekinese dog, for fifteen minutes, and sometimes longer. There was cessation of peristalsis, increased respiration, a temperature of 105° and the pulse was thready, rapid and very irregular. A draught containing ol tereb., ammon carb., aloes and chlorodyne was given, and a hypodermic injection of arecoline hydrobromide. Raking, enemas and catheter produced a small quantity of normal urine, but no fæces. His diagnosis was guarded, but he feared torsion of bowel. There were frequent tremors, the colon and cæcum were empty, and he thought it might be a small bowel twist. He afterwards prescribed chloral, ammon. carb., and nux vomica, and the pain gradually lessened and after 24 hours practically ceased, except for periodic slight pains at longer intervals. More arecoline was given, with no result but salivation. He then gave orders for linseed tea and treacle to be given, with frequent soapy enemas. No peristalsis was noticed for the next 48 hours, and only a slight tinkle occasionally then.

He gave barium chloride in 15 grain doses every six hours, with chlordyne and nux vomica. During all this time, the pony would only pick a little of its straw bed, and drank very little water. Slight peristalsis lasted for five days with no evidence of pain, the temperature varying from 102° to 104.6°. On the eighth day peristalsis increased, and on the tenth there was an evacuation of a fæcal mass about the size of a moderate sized apple, followed by fluid fæces. The temperature was now 101.5°, and the animal's appetite began to return; she would graze and take a little bran, but would drink very little water. She made progress thenceforward, but never seemed to void any great quantity of fæces. He now asked himself what was the real diagnosis?

Mr. W. R. Davis, referring to the first case mentioned by the President, said that several years ago he gave a cow-keeper a bottle of solution of perchloride of mercury with which to wash out the uterus of aborting cows; this contained half a drachm of perchloride of mercury to two tablespoonfuls, and he was to mix that quantity with a couple of quarts of water to syringe out the vagina and uterus of his cows. One day the cow-keeper said to the speaker "That cow you were looking at which has been off colour for about a week, I made a mistake yesterday and gave her two tablespoonfuls of that stuff you gave me to wash the cows out with, and this morning she is all right again." The cow had had half a drachm of perchloride of mercury. All our materia medicas said that no animal was so susceptible to mercurial poisoning as the cow, but he knew from experience that, on the contrary, they could take large doses, because half a drachm was a tremendous dose.

Captain Kirk said a gentleman had been to see him that day to seek his advice about a bull dog, eight months old, which was a very valuable animal and would have taken prizes but for the fact that its testicles had not descended into the scrotum. The gentleman mentioned that all the male puppies with which a certain sire had anything to do, had retained testicles, and he wanted to know whether, by medicine or otherwise, it was possible to induce the testicles to come down, because until they did, or unless they did, judges at shows held under Kennel Club rules would never award such an animal a prize; a dog must be entire, and visibly entire, to gain a prize.

Personally, he had felt unable to give any advice in the matter, and had said he knew of nothing that would induce the testicles to come down at eight months, or even earlier. He suggested an operation might be tried, but his client said his wife was very attached to the dog, and would not have him operated upon. He had wondered afterwards whether it would be possible, even by means of an operation, to get the testicles to come down into the scrotum; on opening the abdomen, one would find that the testicles if they had grown in proportion to the other organs, would be too big. He would like to know what other Fellows present thought could be done.

Mr. Henry Gray said that, according to Sir John Bland Sutton, retained testicles were imperfectly developed testicles, and would not, as a rule, be fertile. In his experience, when the dog got old the retained testicles frequently became very much enlarged, even the size of a cricket ball. Some of them were affected with subacute interstitial orchitis, and some with sarcoma. In some cases he had observed in connection with these enlarged testicles suppurative prostatitis, and Sir John M'Fadyean had examined some of the prostates for him and found pure cultures of streptococcus. The dog might pass pus with his urine, and in the case of very large dogs he had seen the prostate filled with pus and so enlarged as to resemble a large cocoa nut in its husk. Suppurative prostatitis was more common in large than in small dogs. In some cases of chronic suppurative prostatitis he had encountered atrophy of the testicles.

He did not think anything could be done for retained testicles other than removal, and it was not advisable to breed from animals that were imperfect.

Captain Kirk said all the puppies sired by the same animal suffered in the same way; the testicles would not come down. It was a serious matter, because his client valued the dog very highly, and believed it would be an absolute champion if its testicles would descend. As it was, the dog was perfectly well able to get a very stiff erection, and he had suggested to the owner that it might be possible to get some semen from the dog and examine it microscopically to see if there was anything living in it. It was no use at all extracting the testicles, because that would altogether defeat the object aimed at.

Mr. Gray deprecated the propagation of imperfect specimens. One point in regard to dogs with retained testicles he would like to mention was that, when the testicles became enlarged, the affected animals

would be followed by other dogs just as they would a bitch in season, and he had photographs of cases where the dogs had developed the mammary function.

The PRESIDENT declared that what had been said as to retained testicles was of great interest to him, because, shortly after he qualified, he was called in to see a Pekingese with one retained testicle, and asked if there was any possibility of the animal being any good as a sire, and he had replied in the negative. Two days later, however, he was again called in to see the dog mated to a bitch; it was mated perfectly, and the result was six puppies—4 dogs and 2 bitches—and all the puppies were normal; their testicles had descended properly. From that time onwards the dog was continually mated, without producing a single imperfect puppy. He had seen several similar cases since. Whether an operation would be beneficial or not he was not prepared to say, but evidently both the testicles in the case in question were fertile.

Captain KIRK said there was no reason why a dog with only one testicle descended should be sterile.

Mr. SLOCOCK remarked that it was generally thought that an animal with one testicle in the scrotum and one retained was fertile, but he believed an animal with both testicles retained was never fertile. At the risk of displaying some ignorance, he would like to ask at what age in a puppy did the testicles descend, or was the animal born with them already descended, and did they remain there always?

Mr. GRAY said they were in the canal first.

Mr. SLOCOCK asked if they never went up the canal again, in the same way as in the case of a colt?

Mr. GRAY replied in the negative.

Mr. SLOCOCK stated that in the case of a foal they were generally down at a month or six weeks, and then went into the inguinal canal again during the autumn months to come down a second time in the spring.

Mr. GRAY said he examined an orange Pomeranian some time ago which had only one testicle in the scrotum, and it was useless for breeding purposes. A lady had given 300 guineas for it, and, although he told her to get a guarantee that it had sired bitches, she omitted to do so, and she found it was no good for breeding. As the previous owner wanted it for a lady who did not require it for breeding purposes, she gave the purchaser her money back. A very large number of orange Pomeranians had only one testicle descended; it seemed hereditary in them and followed the law of Mendel. He would never advise anyone to buy a dog with only one testicle in the scrotum, if they required it for breeding.

Mr. SLOCOCK: Unless it had been proved to be fertile.

Mr. GRAY agreed.

Mr. SLOCOCK said the horse and the bull were generally fertile with only one testicle descended.

Mr. DAVIS thought it was very uncommon to find a bull with only one testicle down; it was most uncommon to find a retained testicle in bovine animals. He had castrated thousands of calves, but never yet met a case with only one testicle in the scrotum.

Mr. SLOCOCK said he had met such cases; he had seen bulls with only one.

Mr. DAVIS thought such a condition must be most unusual.

Mr. SLOCOCK said he had certainly seen bulls and stallions in that condition.

Mr. DAVIS did not dispute that it was sometimes the case with stallions.

Captain KIRK asked at what age the testicles descended in a puppy, and also what was the latest age in a dog at which retained testicles would descend.

Mr. GRAY said he had castrated a large number of puppies, but had never had any difficulty in finding the testicles.

Captain KIRK asked what was the youngest aged animal in which he had found testicles.

Mr. GRAY replied that he had found them at all ages. It was the same with kittens. Cats, and especially Persian cats, were more liable to cryptorchidy than other species. He thought in-breeding was responsible for a great deal of the trouble, as far as retained testicles were concerned. It was very rare to find scrotal hernia in any other dog than a Pekingese, but one might find every one of a litter of Pekingese affected with hernia. Some time ago, one professor advanced the theory that when scrotal hernia occurred in the foal it was due to forcible extraction of the fœtus. His experience with dogs was that hernia was not due to that, because, when dogs had scrotal hernia, the bitches might have femoral and umbilical. In some cases, the whole length of the recti muscles was not approximated but was separated by a wide thin, transparent tissue. He thought there was no doubt about it being hereditary and congenital.

Mr. SLOCOCK said that was not uncommon in the pig.

Mr. GRAY agreed.

Mr. J. WILLETT said both the specimens brought by Professor Gorton were interesting, but gave rise to very little discussion. It struck him, however, that the skull of the fox terrier was abnormally thin.

The pedal bone submitted by Mr. Jones was of great interest. He had suggested to Mr. Jones that the actual cause of the defoliation in that piece of bone might have been that the animal was run over, but he had no history of the case. It was strange that a piece of bone like that should become detached without any external injury.

Mr. PERRYMAN said he had been particularly interested in the pedal bone Mr. Jones had exhibited. What struck him most forcibly in regard to it was that a portion of the anterior part of the pedal bone was missing, and he wondered whether that was due to aeratoma. He had seen a considerable number, and occasionally they suppurated, very often slowly and with a good deal of pain and inflammation, and it was sometimes difficult to get the pus out of the foot. He usually took a wedge-shaped piece of horn right out of the front, and one would very often find pus one inch up the wall. It occurred to

him that the horse in question might have been subject to keratoma, and he wondered whether Mr. Jones had noticed any peculiarity of the piece of horn in that region of the foot, and whether the suppuration, and the resulting pressure caused the exfoliation. Recently, in dealing with a case of keratoma, he dissected right down to the pedal bone itself.

Some twelve months ago he was called in to see a pony suffering from sand-crack, and he did not know he had ever seen one in greater agony. He stripped the foot down, but that did not give any relief, and the animal had to be killed. To his surprise, there was necrosis of the pedal bone from the top to the bottom. That might not be a parallel case to that of Mr. Jones, but he would like to know if Mr. Jones, when boiling out the foot, found any definite formation of horn, like a keratoma.

Mr. JONES replied that he could emphatically state it was not a case of keratoma—a condition with which he was familiar and for which he always looked. The horse in question was a young one, and keratoma was comparatively rare in young horses. The animal was brought to him with a septic coronitis, which might have been caused by anything. The horse was excessively lame, and was only kept a day or two before being slaughtered. The condition of the toe to which Mr. Perryman referred was due to the fact that after the thing had been boiled out it was very septic, and he tested the bone with a nail to see if it was necrotic.

Mr. PERRYMAN, under those circumstances, withdrew what he had said.

Mr. H. KING produced two specimens. The first was that of an omnibus horse, dating from the days when horse omnibuses were at work in London. The horse suffered a fracture of the first rib, was treated by him for about three months and then went to work again, but fell suddenly lame on the opposite limb, which it would be seen also had a fracture of the first rib. The condition was a common one in omnibus and cab horse in the old days, when they were not so well trained as at the present time, and usually arose through horses being high-spirited and not too quiet at their work, and suffering sudden muscular tension, either as the result of a very bad slip or some similar injury. It would be seen that the off side had got quite all right, and the other side might have, also, had it been allowed sufficient time, but the owner had got rather tired of keeping the animal and had it destroyed.

The other specimen was that of a cob which fell down on the road and was supposed to have been trodden on by the other horse. Whether that was so, or whether it struck the curb, he did not know, but it was exceedingly lame and had to be removed in an ambulance. It was kept longer than it ought to have been owing to the fact that it was insured, and the insurance people could not come to a definite decision. He eventually got authority for it to be killled, however, and found a peculiar fracture. The top of the metacarpus was fractured in triangular form, and also the inner and outer metacarpal bones. He had never seen a fracture similar to that before.

With regard to the temperature of horses, he had seen a horse that afternoon which had a temperature of 111°F. He had been told previously that temperatures of 110° were not uncommon, but had always found it difficult to believe, because, although he had been in practice for 35 years, he had only on one occasion taken the temperature of a horse which was over 107.6°. On perhaps twenty occasions he had found horses with a temperature of 107.6°, but, until that day, only found one with a higher temperature—109°, and that occurred under similar circumstances to the one he had examined that afternoon, during very hot weather. He attributed the temperature of 111° to heat apoplexy; the pulse was 130°, and the horse was down and unable to rise, knocking itself about very much; it was in such a distressed condition that it had to be destroyed. The only reason he took its temperature was that he suspected it would be very high, because the animal which had a temperature of 109° was suffering from sun-stroke.

Mr. GRAY said that some years ago, with the late Mr. Hunting, he hade a *post-mortem* on a case which his colleague maintained to be an undoubted case of radial paralysis, from fractured rib but on *post-mortem* nothing amiss was found to account for the condition; the ribs were normal.

With regard to high temperatures, he remembered many years ago an assistant of his told him of a case he was called in to see where the temperature was over 110°. He did not believe it, and went and took the temperature himself, and found his assistant had been right. Next day the animal was perfectly well.

In cases of pneumonia in horse, he had many times seen a temperature of 107° maintained for a week, and then the animal affected recovered, so that he was not unduly alarmed by high temperatures by themselves. He preferred a high temperature to a lower temperature of 103° or 104° for a week or more, because he knew then that if the horse did not die it would soon get well.

Mr. JONES, referring to the specimen Mr. King had shown of the omnibus horse, asked whether, when the rib came together again, the animal recovered the use of its leg.

Mr. H. KING said it became perfectly sound, and the horse was at work for about three months before the second accident occurred.

The Hon. SECRETARY asked Mr. King whether the horse which had a temperature of 109°, to which he had referred, recovered or not.

Mr. KING said it died about two hours afterwards.

The Hon. SECRETARY said he had had to deal with a similar case—heat-stroke—the previous night. The horse in question had a temperature of 108.2°; its respiration was bad, but its pulse fairly good, and the temperature came down quickly, dropping a degree in about an hour. There was no doubt that tremendous temperatures were found in heat-stroke case, and one was led to wonder how long

an animal could stand a temperature of 108° or 109°—probably not for long.

Mr. KING, adding that the horse to which he had referred was in a very distressed condition, and was knocking itself about badly. It had almost knocked one of its eyes out and broken nearly all its top teeth, and its tongue was hanging right out. It looked as if it was dying fast. It was in the street, and a considerable amount of blood in the road from the injured lips.

Mr. DAVIS said very high temperatures were found in cattle which had been poisoned by Java or other beans, containing a ferment which formed prussic acid. He remembered seeing a case where a man had lost two of his cows from that cause, and he took the temperature of a third, which wcs very ill—sweating, bellowing and in great distress—and found it was 110°. The animal died next day.

Mr. GRAY asked if the high temperature in that case would be due to muscular exertion.

Mr. DAVIS thought it was difficult to tell. It was really a case of prussic acid poisoning.

Mr. GRAY said that after great exertion one was likely to find a high temperature. In injuries of the spinal column it was generally high. He had seen a case of a dog suffering from pneumonia, in which there was no rise of temperature at all. Twice a day—morning and night—for a week the temperature was taken, without showing any rise, and then the dog died. It was not a case of distemper pneumonia, because other dogs were with it and did not contract the complaint or show any signs of ill-health.

Mr. DAVIS was convinced a great number of cases of poisoning occurred in our animals which were never diagnosed as such. Last spring he was asked to examine a four-year old mare, the property of a gipsy. The man who brought it to him gave no history of the case, apparently wishing to see what the veterinary could find out. The mare was greatly depressed, and extremely cold all over; she had a slow pulse, feeble respiration and a low temperature. He remarked to the gipsy that it looked like a case of poisoning, and the man replied, "This mare and another old one were grazing on a piece of land where there were some allotments. They broke into one allotment, the owner of which had devoted half of it to growing parsley, and these two animals ate the whole of the parsley." The old mare purged and was all right, but the mare brought to him was evidently suffering from narcotic poisoning. She recovered, but took about a week over it. He had never known before that parsley was poisonous.

The PRESIDENT asked what was the natural order of parsley.

Mr. DAVIS: Umbelliferous. Continuing, he instanced another case, that of a pedigree female goat which was tethered to a patch of grass near a kitchen garden. After she had eaten the grass allotted to her, as far as she could get, she got discontented and broke her tie-rope; and then, instead of eating the peas and beans in the garden, commenced to browse on an elder tree, and ate the elder leaves and flowers ravenously. She was found there and put into a box and left for the night. Next morning she was very ill, and he was sent for. The box was lined with match-boarding, and all round the sides were patches where she had been vomiting; there were dozens of places where she had forcibly ejected portions of the contents of the rumen. After giving her some stimulant and alkaline medicine she recovered. He never knew, before those two cases, that either parsley or elder leaves were poisonous.

The Hon. SECRETARY suggested it might be due to the quantity eaten.

Mr. DAVIS said he looked up the greatest authority there was on vegetable poisons—Professor Fröhner—and he mentioned neither parsley nor elder as being poisonous.

While on the subject of poisoning, he might mention that at a meeting where grass sickness was under discussion (a report of which appeared in the *Record*), Mr. Inglis, of Forfar, asked Dr. Tocher, of Aberdeen, whether clover was poisonous to horses, because it was suspected that this grass sickness might be associated with clover poisoning, and Dr. Tocher explicitly stated that it was not. That was quite contrary to the facts. Professor Fröhner devoted a page and a half of his book to clover poisoning, and he (Mr. Davis) had seen it himself in horses and lambs. Some years ago, Mr. Scott, of Bridgwater, wrote a long article in the *Record* on the poisoning of lambs by clover. It was white clover which was especially poisonous. He had seen four or five horses which were taken ill through breaking into a field of growing clover and eating it, and one or two of them died.

The Hon. SECRETARY asked what the symptoms were.

Mr. DAVIS said the symptoms were difficulty in swallowing, staggering gait, colic, diarrhoea and yellowness of the mucous and ulceration of buceal membrane, the difficulty in swallowing being most marked. The symptoms of grass sickness were also difficulty in swallowing, trembling and sweating. Professor Fröhner said it might not be due to the clover itself, but to a fungus or rust that grew on the clover, the *Uromyces Apiculatus*.

Mr. GRAY said it was very common in the Eastern Counties, when clover was being carted, for horses to be taken ill with all the symptoms of glosso-pharyngeal paralysis. On the Continent, much attention was devoted to lupin poisoning, the symptoms of which resembled very much those described by Mr. Davis.

Mr. DAVIS said a client of his, a contractor, owned a large number of horses and also had a farm, and brought in a load of lucerne one Saturday afternoon, and fed all his animals with it for the remainder of that day and Sunday. On Monday there were five cases of lymphangitis poisoning by leguminous plants amongst the horses. He had seen cases of the same kind before—two cases, particularly in mares heavy in foal. They got to a wagon laden with freshly cut tares and ate a large quantity. Next day both had lymphangitis and although both were only a few weeks off foaling they each received a dose of physic and both did well.

Mr. GRAY said that at the last meeting it appeared that some people thought it was very difficult, if not impossible, to pass a catheter into a cat, whereas personally, he thought the cat was the easiest animal to deal with. Those who thought it difficult seemed to have used an elastic catheter, and he therefore produced the kind he employed.

A FELLOW said he had obtained one of Mr. Gray's catheters from Messrs. Huish, and used it many times on cats with success.

The PRESIDENT asked if it was fairly easy to pass with a female cat.

Mr. GRAY said he had never attempted that, because he had never had any trouble with the bladder of a female cat, but with the male cat detention due to obstruction was very frequent.

The PRESIDENT asked if one put one's thumb or finger under the penis.

Mr. GRAY said the method was to press the sheath back from the penis towards the pelvis and when the penis was exposed the catheter was passed into the urethra in a vertical position. When it had got as far as it would go in that position circumduct the penis and catheter in a backward direction until they were in a straight line with the floor of the pelvis and then gently push the catheter along the pelvic portion of the urethra until the instrument was in the cavity of the bladder.

Mr. J. ROWE said he had been in practice for over 60 years but had never seen a case of a retained testicle in cats until two years ago; he had had several since. He castrated a cat five months ago with only one testicle descended. He made a note of it, but did not report it to the owner, and later the cat was sent back to him and he was told it was messing about the house and extremely offensive. The other testicle, he found, had descended, and he removed it.

He remembered a time, 50 years ago, when certain fox terriers considered of good pedigree were castrated to limit their stud, and he invariably found those dogs became vicious, and were liable to turn on their owners as well as themselves. It would generally be noticed, he thought, that dogs which had been castrated were more vicious than those which had not.

The PRESIDENT said he had come across a quantity of rig cats in the last eight or nine months; he had met with no less than 13 in the little village of Shepperton. He thought if one could only do the single operation to remove the one testicle, it was one's duty to inform the owner that only one had been removed, and that the other was insufficiently developed for an operation to be performed.

OTHER BUSINESS.

Time of Meeting.—Mr. PERRYMAN said he found it very inconvenient to attend meetings held at 6 p.m., and several other Fellows had mentioned the same thing. He therefore proposed that reversion should be made to the old hour of 7 p.m. He knew the change had been made for the convenience of country members, but most of those attending the meetings came from the London area, and if the meetings were again held at 7 p.m. many of those who had formerly attended them, but who could not get away by 6 p.m. would be able to come. He therefore proposed:

"That the meetings of the Society, from the beginning of next session, start at 7 p.m. instead of 6 p.m."

Messrs. H. KING, J. ROWE and DAVIS spoke in support of the proposal.

The PRESIDENT thought it would be better to refer the matter to the Council, to be considered at their next meeting. The present meeting was rather a small one.

Mr. PERRYMAN said there would be a Council meeting prior to the first General meeting of the next session, at which the matter could be considered and then brought up again at the General meeting.

This procedure was agreed to.

On the motion of Mr. DAVIS, seconded by Mr. ROWE and supported by the PRESIDENT, a hearty vote of thanks was accorded tho those who had brought specimens.

The meeting then terminated.

J. S. MACDONALD, Hon. Secretary.

Cambridge Chair of Animal Pathology.

"Mr. J. Basil Buxton, Fellow of the Royal College of Veterinary Surgeons, holding the Diploma of Veterinary Hygiene, Liverpool, member of the National Institute of Medical Research, and now on the staff of the Medical Research Council, London, has to-day," says *The Times* of August 10th, "been elected into the newly-established Professorship of Animal Pathology in the University."

Correspondence.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

Our Alleged Apathy.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—We have heard much of late regarding the "apathy" of the Veterinary Profession. I think if you could obtain details of the following suggestions they would provide a very interesting comparison, and perhaps go to show that the Veterinary Profession is no worse than any other.

How many members of the 40,000 odd members of the Medical Profession belong to the British Medical Association?

How many of the Medical Profession attended the recent Surgical Congress?

How many veterinary surgeons belong to the N.V.M.A.?

How many members of the N.V.M.A. attended the N.V.M.A. General Meeting?

How many members of the Veterinary Profession joined the International Congress in 1914?

You might compare the Clerical Profession with the above, stating how many attended their Conference.—Yours faithfully, T. JENKINSON RICHARDSON.

36 Gerard Road, Barnes, S.W.13,
July 30th, 1923.

Answer to Correspondent.

H. A. IDENDEN.—We thank you for your letter, but we do not think the *Record* a suitable medium for poetry.

The Editor begs to acknowledge the receipt of the following:—

Communication from Capt. H. E. Hornby.

Clinical article from Major J. J. N. Cameron.

Report of the Scottish Metropolitan Division meeting, from J. Howard Jones, *Hon. Secretary.*